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Foundations of Electromagnetic Theory Foundations of Electromagnetic Theory Foundations of Electromagnetic Theory Foundations of electromagnetic theory Foundations of Electromagnetic Theory Foundations of Electromagnetic Compatibility Mathematical Foundations for Electromagnetic Theory Foundations of Electromagnetic Theory, by John R. Reitz and Frederick J. Milford Outlines and Highlights for Foundations of Electromagnetic Theory by John R Reitz, Isbn Collective Electrodynamics Foundations of the Mathematical Theory of Electromagnetic Waves Electromagnetic Foundations of Electrical Engineering The Foundations of Electromagnetic Field Theory Mathematical Foundations of Computational Electromagnetism Electromagnetic Field Theory Fundamentals Foundations of Geophysical Electromagnetic Theory and Methods Mathematical Foundations for Electromagnetic Theory Topological Foundations of Electromagnetism Topological Foundations Of Electromagnetism (Second Edition) FUNDAMENTALS OF ELECTROMAGNETIC THEORY, Second Edition Electromagnetic Theory for Microwaves and Optoelectronics Fundamentals of Electromagnetism Solutions Manual to Foundations of Electromagnetic Theory Advanced Electromagnetism: Foundations, Theory and Applications Electrodynamics of Continua I Geophysical Electromagnetic

Theory and Methods Electromagnetic Theory Foundations of Electromagnetic Theory, 4/e(Paperback) Electromagnetic Theory for Microwaves and Optoelectronics Foundations of Classical Electrodynamics Understanding Earth Observation Foundations of Electrical Engineering The Unseen Spectrum Basic Electromagnetic Theory Fundamentals of Engineering Electromagnetics Principles and Technologies for Electromagnetic Energy Based Therapies Basic Electromagnetic Theory Handbook of Electromagnetic Compatibility Maxwell on the Electromagnetic Field Electromagnetism

Co-published with Oxford University Press. This highly technical and thought-provoking book stresses the development of mathematical foundations for the application of the electromagnetic model to problems of research and technology. Features include in-depth coverage of linear spaces, Green's functions, spectral expansions, electromagnetic source representations, and electromagnetic boundary value problems. This book will be of interest graduate-level students in engineering, electromagnetics, physics, and applied mathematics as well as to research engineers, physicists, and scientists. Principles and Technologies for Electromagnetic Energy Based Therapies covers the theoretical foundations of electromagnetic-energy based therapies, principles for design of practical devices and systems, techniques for in vitro and in vivo testing of devices, and clinical application examples of contemporary therapies employing non-ionizing electromagnetic energy. The book provides in-depth coverage of: pulsed electric fields, radiofrequency heating systems, tumor treating fields, and

microwave heating technology. Devices and systems for electrical stimulation of neural and cardiac issue are covered as well. Lastly, the book describes and discusses issues that are relevant to engineers who develop and translate these technologies to clinical applications. Readers can access information on incorporation of preclinical testing, clinical studies and IP protection in this book, along with in-depth technical background for engineers on electromagnetic phenomena within the human body and selected therapies. It covers both engineering and biological/medical materials and gives a full perspective on electromagnetics therapies. Unique features include content on tumor treating fields and the development and translation of biomedical devices. Provides in-depth technical background on electromagnetic energy-based therapies, along with real world examples on how to design devices and systems for delivering electromagnetic energy-based therapies Includes guidance on issues that are relevant for translating the technology to the market, such as intellectual property, regulatory issues, and preclinical testing Companion site includes COMSOL models, MATLAB code, and lab protocols This revision is an update of a classic text that has been the standard electricity and magnetism text for close to 40 years. The fourth edition contains more worked examples, a new design and new problems. Vector Analysis, Electrostatistics, Solution of Electrostatic Problems, The Electrostatic Field in Dielectric Media, Microscopic Theory of Dielectrics, Electrostatic Energy, Electric Current, The Magnetic Field of Steady Currents, Magnetic Properties of Matter, Microscopic Theory of Magnetism, Electromagnetic Induction, Magnetic Energy, Slowly Varying Currents, Physics of Plasmas, Electromagnetic Properties

of Superconductors, Maxwell's Equations, Propagation of Monochromatic, Monochromatic Waves in Bounded Regions, Dispersion and Oscillating Fields in Dispersive Media, The Emission of Radiation, Electrodynamics, The Special Theory of Relativity. Intended for those interested in learning the basics of standard electricity and magnetism. In this book Carver Mead offers a radically new approach to the standard problems of electromagnetic theory. Motivated by the belief that the goal of scientific research should be the simplification and unification of knowledge, he describes a new way of doing electrodynamics—collective electrodynamics—that does not rely on Maxwell's equations, but rather uses the quantum nature of matter as its sole basis. Collective electrodynamics is a way of looking at how electrons interact, based on experiments that tell us about the electrons directly. (As Mead points out, Maxwell had no access to these experiments.) The results Mead derives for standard electromagnetic problems are identical to those found in any text. Collective electrodynamics reveals, however, that quantities that we usually think of as being very different are, in fact, the same—that electromagnetic phenomena are simple and direct manifestations of quantum phenomena. Mead views his approach as a first step toward reformulating quantum concepts in a clear and comprehensible manner. The book is divided into five sections: magnetic interaction of steady currents, propagating waves, electromagnetic energy, radiation in free space, and electromagnetic interaction of atoms. In an engaging preface, Mead tells how his approach to electromagnetic theory was inspired by his interaction with Richard Feynman. Advanced Electromagnetism: Foundations, Theory and Applications treats

what is conventionally called electromagnetism or Maxwell's theory within the context of gauge theory or Yang-Mills theory. A major theme of this book is that fields are not stand-alone entities but are defined by their boundary conditions. The book has practical relevance to efficient antenna design, the understanding of forces and stresses in high energy pulses, ring laser gyros, high speed computer logic elements, efficient transfer of power, parametric conversion, and many other devices and systems. Conventional electromagnetism is shown to be an underdeveloped, rather than a completely developed, field of endeavor, with major challenges in development still to be met.
Contents:Foundations:Gauge Theories, and Beyond (R Aldrovandi)Helicity and Electromagnetic Field Topology (G E Marsh)Electromagnetic Gauge as Integration Condition: Einstein's Mass-Energy Equivalence Law and Action-Reaction Opposition (O C de Beauregard)The Symmetry Between Electricity and Magnetism and the Problem of the Existence of a Magnetic Monopole (G Lochak)Quantization as a Wave Effect (P Cornille)Twistors in Field Theory (J Frauendiener & S-T Tsou)Foundational Electrodynamics and Beltrami Vector Fields (D Reed)A Classical Field Theory Explanation of Photons (D M Grimes and C A Grimes)Sagnac Effect: A Consequence of Conservation of Action Due to Gauge Field Global Conformal Invariance in a Multiply-Joined Topology of Coherent Fields (T W Barrett)Gravitation as a Fourth Order Electromagnetic Effect (A K T Assis)Hertzian Invariant Forms of Electromagnetism (T E Phipps Jr)Theory:Pancharatnam's Phase in Polarization Optics (W Dultz & S Klein)Frequency-Dependent Dyadic Green Functions for Bianisotropic Media (W S Weiglhofer)Covariances and

Invariances of the Maxwell Postulates (A Lakhtakia)Solitons and Chaos in Periodic Nonlinear Optical Media and Lasers (J-H Feng & F K Kneubühl)The Balance Equations of Energy and Momentum in Classical Electrodynamics (J L Jiménez & I Campos)Non-Abelian Stokes Theorem (B Broda)Extension of Ohm's Law to Electric and Magnetic Dipole Currents (H F Harmuth)Relativistic Implications in Electromagnetic Field Theory (M Sachs)Symmetries, Conservation Laws, and Maxwell's Equations (J Pohjanpelto)Applications:Six Experiments with Magnetic Charge (V F Mikhailov)Ampère Force: Experimental Tests (R Saumont)The Newtonian Electrodynamics and Its Experimental Foundation (P Graneau)Localized Waves and Limited Diffraction Beams (M R Palmer)Analytical and Numerical Methods for Evaluating Electromagnetic Field Integrals Associated with Current-Carrying Wire Antennas (D H Werner)Transmission and Reception of Power by Antennas (D M Grimes & C A Grimes) Readership: Physicists and electrical engineers. keywords:Electromagnetism;A Electromagnetic Fields;A Fields;A Potenials;A Vector Potentials;A Vector;Maxwell Theory;Extended Maxwell Theory;Gauge Fields;Non-Abelian Electromagnetics;Weber;Sagnac Effect;Yang-Mills;Ring Laser Gyro “… it is important to state that Barrett and Grimes have provided a excellent compendium of papers to support the paradigm shift that is occuring and must occur in physical science if we are to accelerate our understanding of the physical world.” Fusion Information Center, Inc. This"know-how"book gives readers a concise understanding of the fundamentals of EMC, from basic mathematical and physical concepts through present, computer-age methods used in analysis,

design, and tests. With contributions from leading experts in their fields, the text provides a comprehensive overview. Fortified with information on how to solve potential electromagnetic interference (EMI) problems that may arise in electronic design, practitioners will be betterable to grasp the latest techniques, trends, and applications of this increasingly important engineering discipline. Handbook of Electromagnetic Compatibility contains extensive treatment of EMC applications to radio and wireless communications, fiber optics communications, and plasma effects. Coverage of EMC-related issues includes lightning, electromagnetic pulse, biological effects, and electrostatic discharge. Practical examples are used to illustrate the material, and all information is presented in an accessible and organized format. The text is intended primarily for those practicing engineers who need agood foundation in EMC, but it will also interest faculty and students, since a good portion of the material covered can find use in the classroom or as a springboard for further research. The chapters are written by experts in the field Details the fundamental principles, then moves to more advanced topics Covers computational electromagnetics applied to EMC problems Presents an extensive treatment of EMC applications to: Radio and wireless communications, Fiber optic communications, Plasma effects, Wired circuits, Microchips, Includes practical examples, Fiber optic, Communications, Plasma effects, Wired circuits, Microchips, Includes practical examples Major selections from Maxwell's papers on physics are accompanied by commentaries, notes, and a description of the historical and scientific context of his work The Second Edition of this book, while retaining the contents and style of the first edition, continues

to fulfil the require-ments of the course curriculum in Electromagnetic Theory for the undergraduate students of electrical engineering, electronics and telecommunication engineering, and electro-nics and communication engineering. The text covers the modules of the syllabus corresponding to vectors and fields, Maxwell's equations in integral form and differential form, wave propagation in free space and material media, transmission line analysis and waveguide principles. It explains physical and mathematical aspects of the highly complicated electromagnetic theory in a very simple and lucid manner. This new edition includes : • Two separate chapters on Transmission Line and Waveguide • A thoroughly revised chapter on Plane Wave Propagation • Several new solved and unsolved numerical problems asked in various universities' examinations The electrodynamics of continua is a branch ofthe physical sciences concerned with the interaction of electromagnetic fields with deformable bodies. De formable bodies are considered to be continua endowed with continuous distributions of mass and charge. The theory of electromagnetic continua is concerned with the determination of deformations, motions, stress, and elec tromagnetic fields developed in bodies upon the applications of external loads. External loads may be of mechanical origin (e.g., forces, couples, constraints placed on the surface of the body, and initial and boundary conditions arising from thermal and other changes) and/or electromagnetic origin (e.g., electric, magnetic, and current fields). Because bodies of different constitutions respond to external stimuli in a different way, it is imperative to characterize properly the response functions relevant to a given class of continua. This is done by means of the constitutive theory.

For example, an elastic dielectric responds to electromagnetic fields in a totally different way than a magnetic fluid. The present book is intended to present a unified approach to the subject matter, based on the principles of contemporary continuum physics. This book presents an in-depth treatment of various mathematical aspects of electromagnetism and Maxwell's equations: from modeling issues to well-posedness results and the coupled models of plasma physics (Vlasov-Maxwell and Vlasov-Poisson systems) and magnetohydrodynamics (MHD). These equations and boundary conditions are discussed, including a brief review of absorbing boundary conditions. The focus then moves to well-posedness results. The relevant function spaces are introduced, with an emphasis on boundary and topological conditions. General variational frameworks are defined for static and quasi-static problems, time-harmonic problems (including fixed frequency or Helmholtz-like problems and unknown frequency or eigenvalue problems), and time-dependent problems, with or without constraints. They are then applied to prove the well-posedness of Maxwell’s equations and their simplified models, in the various settings described above. The book is completed with a discussion of dimensionally reduced models in prismatic and axisymmetric geometries, and a survey of existence and uniqueness results for the Vlasov-Poisson, Vlasov-Maxwell and MHD equations. The book addresses mainly researchers in applied mathematics who work on Maxwell’s equations. However, it can be used for master or doctorate-level courses on mathematical electromagnetism as it requires only a bachelor-level knowledge of analysis. Foundations of Geophysical Electromagnetic Theory and Methods, Second Edition, builds on

the strength of the first edition to offer a systematic exposition of geophysical electromagnetic theory and methods. This new edition highlights progress made over the last decade, with a special focus on recent advances in marine and airborne electromagnetic methods. Also included are recent case histories on practical applications in tectonic studies, mineral exploration, environmental studies and off-shore hydrocarbon exploration. The book is ideal for geoscientists working in all areas of geophysics, including exploration geophysics and applied physics, as well as graduate students and researchers working in the field of electromagnetic theory and methods. Presents theoretical and methodological foundations of geophysical field theory Synthesizes fundamental theory and the most recent achievements of electromagnetic (EM) geophysical methods in the framework of a unified systematic exposition Offers a unique breadth and completeness in providing a general picture of the current state-of-the-art in EM geophysical technology Discusses practical aspects of EM exploration for mineral and energy resources Basic electromagnetic theory is designed as a concise introduction to electromagnetic field theory emphasizing the physical foundations of the subject. It is aimed at an undergraduate readership, primarily physics students. As such, it covers much material from the standard university syllabus. additionally, however, it develops a number of themes in greater detail, so as to cover a number of non-standard topics that provide a fuller understanding of the subject, by filling in gaps sometimes encountered in other texts. A key aspect to the book is the macroscopic approach to the subject from the outset. Most readers will have some familiarity with the standard mathematics employed, but a review chapter is provided

at the beginning to help give some guidance on these topics as they are used throughout the book. The applications of electromagnetic phenomena within electrical engineering have been evolving and progressing at a fast pace. In contrast, the underlying principles have been stable for a long time and are not expected to undergo any changes. It is these electromagnetic field fundamentals that are the subject of discussion in this book with an emphasis on basic principles, concepts and governing laws that apply across the electrical engineering discipline. Electromagnetic Foundations of Electrical Engineering begins with an explanation of Maxwell's equations, from which the fundamental laws and principles governing the static and time-varying electric and magnetic fields are derived. Results for both slowly- and rapidly-varying electromagnetic field problems are discussed in detail. Key aspects: Offers a project portfolio, with detailed solutions included on the companion website, which draws together aspects from various chapters so as to ensure comprehensive understanding of the fundamentals. Provides end-of-chapter homework problems with a focus on engineering applications. Progresses chapter by chapter to increasingly more challenging topics, allowing the reader to grasp the more simple phenomena and build upon these foundations. Enables the reader to attain a level of competence to subsequently progress to more advanced topics such as electrical machines, power system analysis, electromagnetic compatibility, microwaves and radiation. This book is aimed at electrical engineering students and faculty staff in sub-disciplines as diverse as power and energy systems, circuit theory and telecommunications. It will also appeal to existing electrical engineering professionals with a need for a refresher

course in electromagnetic foundations. This book is a first-year graduate text on electromagnetic fields and waves. It is the translated and revised edition of the Chinese version with the same title published by the Publishing House of Electronic Industry (PHEI) of China in 1994. The text is based on the graduate course lectures on "Advanced Elec trodynamics" given by the authors at Tsinghua University. More than 300 students from the Department of Electronic Engineering and the Depart ment of Applied Physics have taken this course during the last decade. Their particular fields are microwave and millimeterwave theory and technology, physical electronics, optoelectronics and engineering physics. As the title of the book shows, the texts and examples in the book concentrate mainly on electromagnetic theory related to microwaves and optoelectronics, or light wave technology. However, the book can also be used as an intermediate-level text or reference book on electromagnetic fields and waves for students and scientists engaged in research in neighboring fields. This volume addresses the physical foundation of remote sensing. The basic grounds are presented in close association with the kinds of environmental targets to monitor and with the observing techniques. The book aims at plugging the quite large gap between the thorough and quantitative description of electromagnetic waves interacting with the Earth's environment and the user applications of Earth observation. It is intended for scientifically literate students and professionals who plan to gain a first understanding of remote sensing data and of their information content. Vector analysis -- Electrostatics -- Solution of electrostatic problems -- The electrostatic field in dielectric media -- Microscopic theory of dielectrics -- Electrostatic energy --

Electric current -- The magnetic field of steady currents -- Electromagnetic induction -- Magnetic properties of matter -- Microscopic theory of the magnetic properties of matter -- Magnetic energy -- Slowly varying currents -- Physics of plasmas -- Maxwell's equations -- Applications of Maxwell's equations -- Electrodynamics -- Appendix I : Logical definitions of mks units -- Appendix II : Other systems of units -- Appendix III : Proof that div B = 0 and curl B = [mu subscript 0]J. This book is an electromagnetics classic. Originally published in 1941, it has been used by many generations of students, teachers, and researchers ever since. Since it is classic electromagnetics, every chapter continues to be referenced to this day. This classic reissue contains the entire, original edition first published in 1941. Additionally, two new forewords by Dr. Paul E. Gray (former MIT President and colleague of Dr. Stratton) and another by Dr. Donald G. Dudley, Editor of the IEEE Press Series on E/M Waves on the significance of the book's contribution to the field of Electromagnetics. This textbook is a revised and enlarged version of notes for a one-semester course on electromagnetism. It covers the theory of electromagnetic phenomena in vacuum and in material media. The book includes a CD-ROM with didactic software, to solve boundary value problems in electrostatics and magnetostatics. There is currently no single book that covers the mathematics, circuits, and electromagnetics backgrounds needed for the study of electromagnetic compatibility (EMC). This book aims to redress the balance by focusing on EMC and providing the background in all three disciplines. This background is necessary for many EMC practitioners who have been out of study for some time and who are attempting to follow and confidently utilize

more advanced EMC texts. The book is split into three parts: Part 1 is the refresher course in the underlying mathematics; Part 2 is the foundational chapters in electrical circuit theory; Part 3 is the heart of the book: electric and magnetic fields, waves, transmission lines and antennas. Each part of the book provides an independent area of study, yet each is the logical step to the next area, providing a comprehensive course through each topic. Practical EMC applications at the end of each chapter illustrate the applicability of the chapter topics. The Appendix reviews the fundamentals of EMC testing and measurements. The aims of the book are: (1) to extend Maxwell theory to non-Abelian group forms; (2) to demonstrate that the foundations of electromagnetism are topological; (3) to show the multi-disciplinary nature of communications; (4) to demonstrate the effectiveness of modulated signals in penetrating media; (5) to demonstrate that geometric (Clifford) algebra is the appropriate algebra describing modulated signals.The book is important in indicating that the classical theory of electromagnetism, or Maxwell theory, can be developed to address situations and signals of differing symmetry form, and that different topological spaces require that development. In this book the author presents the state-of-the-art electromagnetic (EM) theories and methods employed in EM geophysical exploration. The book brings together the fundamental theory of EM fields and the practical aspects of EM exploration for mineral and energy resources. This text is unique in its breadth and completeness in providing an overview of EM geophysical exploration technology. The book is divided into four parts covering the foundations of EM field theory and its applications, and emerging geophysical methods. Part I is an

introduction to the field theory required for baseline understanding. Part II is an overview of all the basic elements of geophysical EM theory, from Maxwell's fundamental equations to modern methods of modeling the EM field in complex 3-D geoelectrical formations. Part III deals with the regularized solution of ill-posed inverse electromagnetic problems, the multidimensional migration and imaging of electromagnetic data, and general interpretation techniques. Part IV describes major geophysical electromagnetic methods—direct current (DC), induced polarization (IP), magnetotelluric (MT), and controlled-source electromagnetic (CSEM) methods—and covers different applications of EM methods in exploration geophysics, including minerals and HC exploration, environmental study, and crustal study. * Presents theoretical and methodological findings, as well as examples of applications of recently developed algorithms and software in solving practical problems * Describes the practical importance of electromagnetic data through enabling discussions on a construction of a closed technological cycle, processing, analysis and three-dimensional interpretation * Updates current findings in the field, especially with MT, magnetovariational and seismo-electrical methods and the practice of 3D interpretations Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9780321581747 9780201526240 . Guru and Hiziroglu have produced an accessible and user-friendly text on electromagnetics that will appeal to both

students and professors teaching this course. This lively book includes many worked examples and problems in every chapter, as well as chapter summaries and background revision material where appropriate. The book introduces undergraduate students to the basic concepts of electrostatic and magnetostatic fields, before moving on to cover Maxwell's equations, propagation, transmission and radiation. Chapters on the Finite Element and Finite Difference method, and a detailed appendix on the Smith chart are additional enhancements. MathCad code for many examples in the book and a comprehensive solutions set are available at www.cambridge.org/9780521830164.
Electromagnetics is too important in too many fields for knowledge to be gathered on the fly. A deep understanding gained through structured presentation of concepts and practical problem solving is the best way to approach this important subject. Fundamentals of Engineering Electromagnetics provides such an understanding, distilling the most important theoretical aspects and applying this knowledge to the formulation and solution of real engineering problems. Comprising chapters drawn from the critically acclaimed Handbook of Engineering Electromagnetics, this book supplies a focused treatment that is ideal for specialists in areas such as medicine, communications, and remote sensing who have a need to understand and apply electromagnetic principles, but who are unfamiliar with the field. Here is what the critics have to say about the original work "...accompanied with practical engineering applications and useful illustrations, as well as a good selection of references ... those chapters that are devoted to areas that I am less familiar with, but currently have a need to address, have certainly been valuable to me. This book will

therefore provide a useful resource for many engineers working in applied electromagnetics, particularly those in the early stages of their careers." -Alastair R. Ruddle, The IEE Online "...a tour of practical electromagnetics written by industry experts ... provides an excellent tour of the practical side of electromagnetics ... a useful reference for a wide range of electromagnetics problems ... a very useful and well-written compendium..." -Alfy Riddle, IEEE Microwave Magazine Fundamentals of Engineering Electromagnetics lays the theoretical foundation for solving new and complex engineering problems involving electromagnetics. Basic Electromagnetic Theory is designed as a concise introduction to electromagnetic field theory emphasizing the physical foundations of the subject. It is aimed at both undergraduates and interested laypersons. It has been based on the author's experience both as a former field theorist (working on quantum electrodynamics) and currently as an applied optical physicist. As such, it covers much material from the standard university syllabus. It also develops a number of themes in greater detail, so as to cover a number of non-standard topics that provide a fuller understanding of the subject. A key aspect to the book is the macroscopic approach to the subject from the outset. Most readers will have some familiarity with the standard mathematics employed, but a review chapter is provided at the beginning to help give some guidance on these topics as they are used throughout the book. Features: •Designed as a concise introduction to electromagnetic field theory emphasizing the physical foundations of the subject •Covers a number of non-standard topics that provide a fuller understanding of the subject This book is a first year graduate text on electromagnetic fields

and waves. At the same time it serves as a useful reference for researchers and engineers in the areas of microwaves and optoelectronics. Following the presentation of the physical and mathematical foundations of electromagnetic theory, the book discusses the field analysis of electromagnetic waves confined in material boundaries, or so-called guided waves, electromagnetic waves in the dispersive media and anisotropic media, Gaussian beams and scalar diffraction theory. The theories and methods presented in the book are foundations of wireless engineering, microwave and millimeter wave techniques, optoelectronics and optical fiber communication. In this book we display the fundamental structure underlying classical electro dynamics, i. e. , the phenomenological theory of electric and magnetic effects. The book can be used as a textbook for an advanced course in theoretical electrodynamics for physics and mathematics students and, perhaps, for some highly motivated electrical engineering students. We expect from our readers that they know elementary electrodynamics in the conventional (1 + 3)-dimensional form including Maxwell's equations. More over, they should be familiar with linear algebra and elementary analysis, in cluding vector analysis. Some knowledge of differential geometry would help. Our approach rests on the metric-free integral formulation of the conservation laws of electrodynamics in the tradition of F. Kottler (1922), E. Cartan (1923), and D. van Dantzig (1934), and we stress, in particular, the axiomatic point of view. In this manner we are led to an understanding of why the Maxwell equa tions have their specific form. We hope that our book can be seen in the classical tradition of the book by E. J. Post (1962) on the Formal Structure of Electro magnetics and of the chapter "Charge and

Magnetic Flux" of the encyclopedia article on classical field theories by C. Truesdell and R. A. Toupin (1960), in cluding R. A. Toupin's Bressanone lectures (1965); for the exact references see the end of the introduction on page 11. . A basic introduction to electromagnetism, supplying the fundamentals of electrostatics and magnetostatics, in addition to a thorough investigation of electromagnetic theory. Numerous problems and references. Calculus and differential equations required. 1947 edition. Foundations of Electrical Engineering covers the fundamental ideas and basic laws in electrical engineering. This book is organized into five parts encompassing 24 chapters. Part I provides an overview of the Maxwell's equation and its significance in electrical engineering. Part II deals first with the determination of static and steady electric fields. This part also discusses the solution of Laplace's equation, boundary value problems, the concept of capacity, and magnetic field. Parts III and IV explore the laws of network analysis and synthesis, as well as the basic principles and applications of electromagnetic waves. These parts also describe the main features of classical electrodynamics and its application to problems of electrical engineering. Part V highlights the combined contributions of Maxwell's equations and the laws of mechanics in the subject field. Electrical engineers, and electrical engineering teachers and students will find this book invaluable.

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